Docket No. AUS920010215US1

METHOD AND APPARATUS FOR BILL PAYMENTS AT AN AUTOMATIC TELLER MACHINE

CROSS REFERENCE TO RELATED APPLICATIONS

The present invention is related to the following applications: *Method and Apparatus for Processing Checks at an Automatic Teller Machine for Electronic Transfer*, serial no. _____, attorney docket no. AUS920010211US1; *Method and Apparatus for Processing a Check within a Financial System*, serial no. _____, attorney docket no. AUS920010213US1; *Method and Apparatus for Incorporating Scanned Checks into Financial Applications*, serial no. _____, attorney docket no. AUS920010214US1; and *Method and Apparatus for Facilitating Transactions at an Automatic Teller Machine*, serial no. _____, attorney docket no. AUS920010216US1, filed even date hereof, assigned to the same assignee, and incorporated herein by reference.

BACKGROUND OF THE INVENTION

1. Technical Field:

The present invention relates generally to an improved data processing system and in particular to a method and apparatus for processing bills in a data processing system. Still more particularly, the present invention provides a method and apparatus for bills and bill payments at an automatic teller machine.

2. Description of Related Art:

Automatic teller machines (ATMs) are widely available devices used for dispensing cash. An ATM user is provided with an ATM card as well as a personal identification number (PIN) or password for use in withdrawing funds. Typically, the ATM user withdraws cash from a checking account, a savings account, or as an advance from a credit card. A user also may use an ATM to transfer money from a savings account to a checking account. In other instances the user uses the ATM to ascertain an account balance for a checking account or savings account.

Other uses have been added to ATMs other than dispensing cash. For example, some ATMs now provide a feature in which stamps are dispensed to the user rather than cash. Another use is an ability to deposit cash or checks through an ATM. A user places cash or a check in an envelope provided at the ATM. Next, the user places the ATM card into the ATM, enters a PIN number, and selects an option to make a deposit. The user then enters the amount being deposited and places the envelope into the ATM. Deposits are then later collected and processed. ATMs are widely used because they provide convenient services that are often not available at a business location of a financial institution. For example, a at ATM a user may obtain cash 24 hours a day. Although these types of ATM services are becoming more widespread and easy to access, the variety in the type of services provided by an ATM are still limited.

Therefore, it would be advantageous to have an improved method and apparatus for providing additional services at an ATM.

SUMMARY OF THE INVENTION

The present invention provides a method, apparatus and computer implemented instructions for processing a bill in an automatic teller machine. The bill is scanned to form a bill image in which the bill includes a markup language providing payment information. Optical character recognition is performed on the bill image to identify the payment information. The bill is processed using the payment information. Bills, such as water bills, mortgages, credit card statements, and tax bills may be paid in this manner.

BRIEF DESCRIPTION OF THE DRAWINGS

The novel features believed characteristic of the invention are set forth in the appended claims. The invention itself, however, as well as a preferred mode of use, further objectives and advantages thereof, will best be understood by reference to the following detailed description of an illustrative embodiment when read in conjunction with the accompanying drawings, wherein:

Figure 1 depicts a pictorial representation of a network of data processing systems in which the present invention may be implemented;

Figure 2 is a block diagram of a data processing system that may be implemented as a server in accordance with a preferred embodiment of the present invention;

Figure 3 is a diagram of a client in the form of a personal digital assistant (PDA) in accordance with a preferred embodiment of the present invention;

Figure 4 is a block diagram of a PDA in accordance with a preferred embodiment of the present invention;

Figure 5 is a diagram illustrating an automatic teller machine (ATM) in accordance with a preferred embodiment of the present invention;

Figure 6 is a block diagram illustrating an ATM in accordance with a preferred embodiment of the present invention;

Figure 7 is a diagram illustrating transfer of information for import into a financial application in accordance with a preferred embodiment of the present invention;

Figure 8 is a diagram illustrating data flow in creating a check image in accordance with a preferred embodiment of the present invention;

Figure 9 is a diagram illustrating a bill in accordance with a preferred embodiment of the present invention;

Figure 10 is a diagram illustrating software components in an ATM in accordance with a preferred embodiment of the present invention;

Figure 12 is a flowchart of a process used for processing a bill and a bill payment in accordance with a preferred embodiment of the present invention; and

Figure 13 is a flowchart of a process used for paying a tax bill in accordance with a preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference now to the figures, **Figure 1** depicts a pictorial representation of a network of data processing systems in which the present invention may be implemented. Network data processing system **100** is a network of computers in which the present invention may be implemented. Network data processing system **100** contains a network **102**, which is the medium used to provide communications links between various devices and computers connected together within network data processing system **100**. Network **102** may include connections, such as wire, wireless communication links, or fiber optic cables.

In the depicted example, a server **104** is connected to network **102** along with storage unit **106**. Server **104** is a computer located at a financial institution, such as a bank, a credit union, a mortgage company, or a brokerage firm.

Server **104** is used to provide various functions relating to daily financial transactions handled by the bank, such as deposits and withdrawals of funds. In addition, ATMs **108**, **110**, and **112** also are connected to network **102**. ATMs **108**, **110**, and **112** are clients to server **104**. Server **104** is in communication with ATMs **108**, **110**, and **112** to handle various transactions that users may initiate at these devices. For example, if a user withdraws cash from ATM **108**, the debiting of the account is handled by server **104**.

Server **114** and server **116** also are connected to network **102** and may represent computers located at other

financial institutions. ATMs **108**, **110**, and **112** also may be clients to these servers depending on the particular user accessing ATMs **108**, **110** and **112**. Additionally, these servers also may represent computers located at other financial institutions, such as a regional clearinghouse, a national clearinghouse, or a Federal Reserve Bank.

The present invention provides for scanning of checks or bills at an ATM, such as ATM **108**, when a user deposits a check with the financial institution or desires to pay a bill. With a check, an image of both sides of the check is made when the check is deposited. Additionally, optical character recognition is performed on the check to obtain information, such as the recipient of the check, and the amount of funds to be transferred from the account. Further, a magnetic ink reader reads magnetic ink data on the check to obtain information, such as the bank's identification number as well as the user's checking account number with the bank. A markup language document is created containing this other information obtained from the check. The markup language document forms an electronic check. Additionally, the image of the check also may be associated with the markup language document as part of the electronic check. This electronic check is then sent from ATM **108** to server **104** for processing.

When a bill is to be processed for payment, the bill is scanned in and particular payment information is identified from markup language information located in the bill. This information may include, for example, the name of the company originating the bill, a payment address, and a payment amount, as well as any information

needed to facilitate payment of the bill by a user at an ATM. Additionally, the present invention also provides other services, such as converting a regular check to a certified check and issuing temporary identification documents.

Network data processing system **100** may include additional servers, clients, and other devices not shown. In the depicted example, network data processing system **100** is the Internet with network **102** representing a worldwide collection of networks and gateways that use the TCP/IP suite of protocols to communicate with one another. Of course, network data processing system **100** also may be implemented as a number of different types of networks, such as for example, an intranet, a local area network (LAN), or a wide area network (WAN). **Figure 1** is intended as an example, and not as an architectural limitation for the present invention.

Referring to **Figure 2**, a block diagram of a data processing system that may be implemented as a server, such as server **104**, **114**, or **116** in **Figure 1**, is depicted in accordance with a preferred embodiment of the present invention. Data processing system **200** may be a symmetric multiprocessor (SMP) system including a plurality of processors **202** and **204** connected to system bus **206**. Alternatively, a single processor system may be employed. Also connected to system bus **206** is memory controller/cache **208**, which provides an interface to local memory **209**. I/O bus bridge **210** is connected to system bus **206** and provides an interface to I/O bus **212**. Memory controller/cache **208** and I/O bus bridge **210** may be integrated as depicted.

Peripheral component interconnect (PCI) bus bridge **214** connected to I/O bus **212** provides an interface to PCI local bus **216**. A number of modems may be connected to PCI local bus **216**. Typical PCI bus implementations will support four PCI expansion slots or add-in connectors. Communications links to ATMs **108-112** in **Figure 1** may be provided through modem **218** and network adapter **220** connected to PCI local bus **216** through add-in boards.

Additional PCI bus bridges **222** and **224** provide interfaces for additional PCI local buses **226** and **228**, from which additional modems or network adapters may be supported. In this manner, data processing system **200** allows connections to multiple network computers. A memory-mapped graphics adapter **230** and hard disk **232** may also be connected to I/O bus **212** as depicted, either directly or indirectly.

Those of ordinary skill in the art will appreciate that the hardware depicted in **Figure 2** may vary. For example, other peripheral devices, such as optical disk drives and the like, also may be used in addition to or in place of the hardware depicted. The depicted example is not meant to imply architectural limitations with respect to the present invention.

The data processing system depicted in **Figure 2** may be, for example, an IBM e-Server pSeries system, a product of International Business Machines Corporation in Armonk, New York, running the Advanced Interactive Executive (AIX) operating system.

With reference now to **Figure 3**, a diagram of a client in the form of a personal digital assistant (PDA) is depicted in accordance with a preferred embodiment of

the present invention. PDA **300** may be used to receive a confirmation of a bill payment or a check deposit. Further, a user may pre-scan a bill into PDA **300** and transmit that image to an ATM, such as ATM **108** in **Figure 1** for payment processing.

PDA **300** includes a display **302** for presenting textual and graphical information. Display **302** may be a known display device, such as a liquid crystal display (LCD) device. The display may be used to present a map or directions, calendar information, a telephone directory, or an electronic mail message. In these examples, display **302** may receive user input using an input device such as, for example, stylus **310.**

PDA **300** may also include keypad **304**, speaker **306**, and antenna **308**. Keypad **304** may be used to receive user input in addition to using display **302**. Speaker **306** provides a mechanism for audio output, such as presentation of an audio file. Antenna **308** provides a mechanism used in establishing a wireless communications link between PDA **300** and a network, such as network **102** in **Figure 1.**

PDA **300** also preferably includes a graphical user interface that may be implemented by means of systems software residing in computer readable media in operation within PDA **300.**

Turning now to **Figure 4**, a block diagram of a PDA is shown in accordance with a preferred embodiment of the present invention. PDA **400** is an example of a PDA, such as PDA **300** in **Figure 3**, in which code or instructions implementing the processes of the present invention may be located. PDA **400** includes a bus **402** to which processor

404 and main memory **406** are connected. Display adapter **408**, keypad adapter **410**, storage **412,** and audio adapter **414** also are connected to bus **402**. Cradle link **416** provides a mechanism to connect PDA **400** to a cradle used in synchronizing data in PDA **400** with another data processing system. Further, display adapter **408** also includes a mechanism to receive user input from a stylus when a touch screen display is employed.

An operating system runs on processor **404** and is used to coordinate and provide control of various components within PDA **400** in **Figure 4**. The operating system may be, for example, a commercially available operating system such as Windows CE, which is available from Microsoft Corporation. Instructions for the operating system and applications or programs are located on storage devices, such as storage **412**, and may be loaded into main memory **406** for execution by processor **404.**

Those of ordinary skill in the art will appreciate that the hardware in **Figure 4** may vary depending on the implementation. Other internal hardware or peripheral devices, such as flash ROM (or equivalent nonvolatile memory) or optical disk drives and the like, may be used in addition to or in place of the hardware depicted in **Figure 4**.

Turning next to **Figure 5**, a diagram illustrating an automatic teller machine (ATM) is depicted in accordance with a preferred embodiment of the present invention. ATM **500** is an illustration of an ATM, such as ATM **108**, **110** or **112** in **Figure 1**.

In this example, an ATM card or a smart card may be received in slot **502**. ATM **500** also includes an input

slot **504** and an output slot **506**. Input slot **504** is used to receive items, such as cash or a check for deposit. Cash dispenser slot **508** is used to dispense cash to a user. Keypad **510** provides an input device for a user to input information, such as an amount of money that is to be deposited or to make selections, such as receiving an account balance or an amount of cash to withdraw. Display **512** is used to present information to the user. Video camera **514** provides for recording transactions. Additionally, video camera **514** may be used to capture an image of the user at ATM **500**.

Turning next to **Figure 6**, a block diagram illustrating an ATM is depicted in accordance with a preferred embodiment of the present invention. ATM **600** may be implemented as in ATM **108**, **110**, or **112** in **Figure 1**.

In the depicted examples, bus **602** connects processor unit **604**, memory **606**, hard disk drive **608**, I/O controller **610**, and communications unit **612**. Computer instructions may be located in memory **606** or in hard disk drive **608**. These instructions are processed by processor unit **604** to provide ATM functions as well as the check scanning and electronic check creation processes of the present invention. Additionally, transaction information may also be stored on hard disk drive **608**. Communications unit **612** establishes a communications link with a server, such as server **104**, **114** or **116** in **Figure 1** through a network, such as network **102** in **Figure 1**.

I/O controller **610** provides a mechanism for input/output devices, such as, for example, display **614**, card reader **616**, printer **618**, output slot feeder **620**, input slot

feeder **622**, scanner **624**, keypad **626**, check processing unit **628**, and cash dispenser **630**. Display **614** provides a mechanism to present information to the ATM user. Card reader **616** is used to read an ATM card or a smart card inserted into the ATM. Printer **618** is used to print a receipt or other information in response to a user input. Keypad **626** is used to receive user input. Output slot feeder **620** is used to feed receipts generated by printer **618** to an output slot, such as output slot **506** in **Figure 5**. Input slot reader **622** is used to receive checks, documents, or cash placed into an input slot, such as input slot **504** in **Figure 5**. Check processing unit **628** is used to move a check within the ATM. In particular, check processing unit **628** may move a check into a position for scanning by scanner **624** and then move the check into storage. If a check is not accepted, the check may be returned to output slot feeder **620** for return to a user. Additionally, check processing unit **628** may be employed to position other documents for scanning by scanner **624**. For example, this unit may be used to position a bill for scanning. Cash dispenser **630** is used to dispense cash when a user withdraws funds from a user account.

The components depicted in **Figures 5** and **6** are provided for purposes of illustration and are not meant to imply architectural limitations to the present invention.

With reference now to **Figure 7**, a diagram illustrating transfer of information for import into a financial application is depicted in accordance with a preferred embodiment of the present invention. A user

may deposit a check at ATM **700** for credit to the user's account with a financial institution. Alternatively, the user may deposit a document, such as a bill, for processing at ATM **700**. In these examples, the check or bill is scanned within ATM **700** to create an image of the check or bill. In the case of a check, the image of the check and information obtained from the check may be sent to server **702** located at the financial institution through network **704**.

Information regarding the deposit of the check may be returned to ATM **700** from server **702**. This information as well as an image of the check may be downloaded to the user through a mobile device, such as PDA **706**. PDA **706** is shown for purposes of illustration and other mobile devices, such as a mobile phone, also may be used. In the depicted examples, the information is placed into a format that may be imported by various financial programs. The user may then upload the information to client **708** for import to financial program **710**. In this manner, check images and other financial information may be easily integrated into financial programs or applications. Financial programs also could be located in PDA **706** depending on the implementation.

Additionally, the check image and other financial information may be sent or made available to a user through a Web site or sending of an e-mail. For example, the check image and information may be placed into a file in a format for import to a financial program on a secure Web site. The user accesses the Web site through client **708** by entering an appropriate ID and password. The user may then download the file for import and use in the financial program. The transfer takes place using a

secure connection, such as that provided by the Secure Sockets Layer (SSL) protocol. Alternatively, the information may be sent in an e-mail or as an attachment to an e-mail in an encrypted form.

In addition, a user may process bills for payment at ATM **700**. A user may scan in bill **712** at ATM **700** or transfer an electronic copy of the bill from a mobile device, such as, for example, PDA **706**. If the bill is a physical one, ATM **700** will scan bill **712** to create an image of the bill. In the depicted examples, bill **712** includes payment information **714**, which is in a markup language format in these examples. Financial services markup language (FSML) or other markup languages, such as extensible markup language (XML) may be used. Payment information **714** may take different forms, such as text or a bar code, depending on the implementation. The scanned image is searched to identify payment information **714**, which is used to process the bill for the user at ATM **700**.

The user may be presented with various payment options to pay the bill as well as select a payment amount if some amount other than the full payment is acceptable as identified from payment information **714**. Payment options may include, for example, through a direct transfer of funds, a check, or a credit card.

Turning next to **Figure 8**, a diagram illustrating data flow in creating a check image is depicted in accordance with a preferred embodiment of the present invention. Paper document **800** is input or placed into an ATM, such as ATM **500** through input slot **504** in **Figure 5**. In this example, paper document **800** is a check. Scanner

802 scans both sides of paper document **800**. In this manner, endorsements as well as signature and amount information from the front of the check may be obtained. Digital document **804** is generated by scanner **802** and stored in memory **806** for further processing. Optical character recognition processes (OCR) may be initiated to process digital document **804** to generate information used in creating a markup language representation of paper document **800**. In these examples, this markup language representation form is an electronic check.

Turning next to **Figure 9**, a diagram illustrating a bill is depicted in accordance with a preferred embodiment of the present invention. Bill **900** is an example of a bill, which may be processes by scanner **802** in **Figure 8**. Bill **900** contains information, which may be read by a user in paying bill **900** through conventional means. For example, bill **900** includes amount due **902**, minimum payment **904**, and payment address **906**.

Bill **900** also allows for bill payment through scanning of bill **900** into an ATM or other scanning device. This type of bill payment is facilitated through markup language information **908** located in bill **900**. This information may not be in a user readable format. For example, the markup language information may take the form of a bar code in addition to text. Markup language information **908** contains the information needed to facilitate a bill payment for the user at an ATM. For example, markup language information **908** may include amount due, a minimum payment, and a payment address as well as the name of the company to which the payment is to be sent. This information is described for purposes

of illustration and other information may be included or in place of the described information depending on the particular implementation.

Turning next to **Figure 10**, a diagram illustrating software components in an ATM is depicted in accordance with a preferred embodiment of the present invention. In this example, the software components in an ATM include operating system **1000**, scanner device driver **1002**, printer device driver **1004**, video device driver **1006**, network device driver **1008**, ATM transaction application **1010**, ATM transcode application **1012**, and ATM scan application **1014**.

The device drivers provide the components needed to operate devices within an ATM. These device drivers are used by ATM transaction application **1010**, ATM transcode application **1012**, and ATM scan application **1014** to perform various input/output functions.

ATM transaction application **1010** provides a process for various transactions by a user. Cash withdrawals, balance inquiries, fund transfers, deposits, and bill processing and payments are examples of transactions that may be handled through ATM transaction application **1010**. Additionally, ATM transaction application **1010** handles the transmission and receipt of information to and from various financial institutions. When a check is deposited, ATM scan application **1014** is initiated to create an image of the check. In the depicted examples, the image is of both sides of the check. Additionally, ATM scan application **1014** also will include optical character recognition processes to obtain data for use in creating an electronic check. This data is used by ATM

transcode application **1012** to generate a markup language representation of the check.

With respect to bills, payment information may be included on the bill in a markup language format, such as financial services markup language (FSML) or extensible markup language. This payment information may include, for example, amount of the bill, a minimum payment amount, the recipient of the bill, the originator of the bill, address for payments, and a due date for payment.

ATM transaction application **1010** also may transfer the image of a check and other information to a user mobile device, such as a PDA or mobile phone. The user may then upload that information to a computer containing a financial program. The image and information is placed into a format that allows for its import into the financial program.

In these examples, the markup language may be financial services markup language (FSML) and signed document markup language (SDML). FSML is used to implement electronic checks and other secure financial documents. FSML defines a method to structure documents into blocks of tagged content. Unlike HTML, which uses tags to inform processors about how to display content, FSML uses tags to inform processors about how to use the document content in financial applications. The FSML content blocks in an FSML document can be cryptographically sealed and signed in any combination needed by business applications. Document processors may also remove blocks without invalidating the signatures on the remaining blocks. They may combine signed documents and then sign blocks contained in the combined documents. Signatures are themselves structured as FSML blocks, as

are the X.509 certificates needed by downstream processors to verify the signatures. Thus signatures and certificates become part of the FSML document, so they can be verified and countersigned by later signers.

SDML is designed to tag the individual text items making up a document, group the text items into document parts which can have business meaning and can be signed individually or together, allow document parts to be added and deleted without invalidating previous signatures, and allow signing, cosigning, endorsing, co-endorsing, and witnessing operations on documents and document parts. The signatures become part of the SDML document and can be verified by subsequent recipients as the document travels through the business process. SDML does not define encryption, since encryption is between each sender and receiver in the business process and can differ for each link depending on the transport used. SDML is the generic document structuring and signing part of the FSML.

In the depicted examples, the markup language document forms an electronic check. Depending on the implementation, the electronic check also may include the image of the check.

Turning next to **Figure 11** an illustration of a message sent from an ATM to a financial institution is depicted in accordance with a preferred embodiment of the present invention. Message **1100** is an example of a message that may be sent from an ATM to a financial institution. For example, an electronic check or a bill payment generated at an ATM, such as ATM **108**, may be sent to server **104** in **Figure 1** for processing. The electronic check or bill payment may be sent within message **1100**.

Message **1100** includes header **1102** and body **1104**. Header **1102** may include information, such as an identification of attachments and a delivery route for the message. Body **1104** may include signature **1106** as well as content **1108**. Signature **1106** may be obtained from scanning of the check or via a digital signature from a smart card held by the user. Content **1108** may contain the digital image of the check and/or an electronic check. The electronic check may be a document created using FSML and SDML.

Turning now to **Figure 12**, a flowchart of a process used for processing a bill and a bill payment is depicted in accordance with a preferred embodiment of the present invention. The process illustrated in **Figure 12** may be implemented in a program, such as ATM transaction application **1010** in **Figure 10.**

The process begins by receiving an image of a bill (step **1200**). In these examples, the bill is scanned at the ATM to create the image. The bill includes payment information in a markup language format, such as FSML. This markup language information may be, for example, in text, a bar code, or other forms depending on the implementation. OCR is performed on this image (step **1202**). Next, the payment information in the bill is identified (step **1204**). Payment amount and routing information is obtained from the payment information (step **1206**). Payment amount and payment options are then presented to the user (step **1208**). These options may include paying a lesser amount if a full payment is not required. For example, a minimum payment may be allowed. The user may choose to pay the bill through various

means, such as, for example, a direct transfer of funds, a credit card, or a check.

Fund transfers are initiated based on the user's input (step **1210**). The bill image is time stamped (step **1212**) with the process terminating thereafter. The time stamping may be used to verify when the payment occurred.

With reference now to **Figure 13**, a flowchart of a process used for paying a tax bill is depicted in accordance with a preferred embodiment of the present invention. The process illustrated in **Figure 13** may be implemented in a program, such as ATM transaction application **1010** in **Figure 10**.

The process begins by receiving input from a user identifying a form of submission of a tax form (step **1300**). The form of submission in these examples may be a physical tax form or an electronic one. Video recording of the transmission begins (step **1302**). A determination is then made as to whether the tax form is physical or electronic (step **1304**).

If the tax form is physical, it is scanned to form an image of the tax form (step **1306**). OCR is then performed on the image of the tax form to identify payment or refund data (step **1308**). The information may be identified using templates to identify locations of information on the image. Most tax forms are standardized, allowing for the use of templates. Also, the information also may be in a markup language form, similar to the payment information as described above with respect to **Figure 12**.

Next, supporting documents are requested (step **1310**). Supporting documents are scanned in (step **1312**). Payment is then received or a refund process is initiated

depending on the tax form (step **1314**). The scanned documents are time stamped (step **1316**), and the video recording of the transaction ends (step **1318**). A receipt is then generated (step **1320**). The receipt is sent to the user (step **1322**) with the process terminating thereafter. This receipt may be sent, for example, by printing the receipt at the ATM, by sending an electronic receipt to a mobile device carried by the user, or an e-mail message to the user.

With reference again to step **1304**, if the tax form is electronic, the tax form is received from a mobile device (step **1324**) with the process proceeding to step **1310** as described above.

It is important to note that while the present invention has been described in the context of a fully functioning data processing system, those of ordinary skill in the art will appreciate that the processes of the present invention are capable of being distributed in the form of a computer readable medium of instructions and a variety of forms and that the present invention applies equally regardless of the particular type of signal bearing media actually used to carry out the distribution. Examples of computer readable media include recordable-type media, such as a floppy disk, a hard disk drive, a RAM, CD-ROMs, DVD-ROMs, and transmission-type media, such as digital and analog communications links, wired or wireless communications links using transmission forms, such as, for example, radio frequency and light wave transmissions. The computer readable media may take the form of coded formats that are decoded for actual use in a particular data processing system.

The description of the present invention has been presented for purposes of illustration and description, and is not intended to be exhaustive or limited to the invention in the form disclosed. Many modifications and variations will be apparent to those of ordinary skill in the art. For example, the smart card may be replaced by a regular credit card or an ATM card with some loss in functionality. The embodiment was chosen and described in order to best explain the principles of the invention, the practical application, and to enable others of ordinary skill in the art to understand the invention for various embodiments with various modifications as are suited to the particular use contemplated.